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ABSTRACTS

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1. Role of Major Nutrients (NPK) in Flower Crops : A Review

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ABSTRACT : Vibrant horticulture is dependent upon many factors, among which proper and judicious soil nutrient management practices comes first. There are seventeen elements are known to be essential for plants. Among which nitrogen, phosphorous and potassium plays vital role and they are considered as major plant nutrients. Among horticultural crops, floriculture is growing at an alarming rate both in open and protected cultivation. Proper growth and development of the plant is ultimately effected by regular nutritional management. Importance of major plant nutrients and their dose for better growth and yield for various flower crops viz. gladiolus, rose, gerbera, golden rod, cymbidium, chrysanthemum, calendula, China aster, anthurium, tulip, marigold, tuberose, gaillardia, larkspur, spider lily etc. has been reviewed for better understanding and will be helpful for present crop cultivation and future research purpose.

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1. Biology and Eco-friendly Management of 28-Spotted Lady Beetle (*Henosepilachna vigintioctopunctata* Fabr.)—A Serious Pest of Brinjal

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ABSTRACT : Brinjal (*Solanum melongena* L.) is an important Solanaceous crop of subtropics and tropics. Several biotic and abiotic factors contribute in lowering the yield in brinjal. Among various biotic factors, insect pests are important which greatly affect the quality and productivity of brinjal crop through inflicting a direct damage. 28-Spotted lady beetle, *Henosepilachna vigintioctopunctata* (F.) (Coleoptera: Coccinellidae) is one of the major pest of egg plant. The larvae and adults scrape the green matter from brinjal leaves and cause damage up to 80%. The morphology and biology of the pest is described under this study. Among the various components of management, *Aspergillus flavus* and *Bacillus thuringiensis* are effective against different stages of *H. vigintioctopunctata*. The predator reduviid bug, *Rhinocoris fuscipes* (Fab.) is quite efficient. The various plant products are found to be effective against this pest. The repellent and antifeedant properties of Neem, Mahua and Groundnut cakes have also been established.

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3. An Economic Assessment of Banana Production in Bhagalpur district of Bihar

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ABSTRACT : The study was conducted on primary data, collected from a sample of 60 banana growers, consisted of 26 (43 %), 25 (42 %) and 9 (15 %) marginal & small, semi-medium and medium & large category. The data were collected from the sample growers with the help of specifically prepared pre-tested schedules through Survey Method by interviewing them, selected through Multi-Stage Sampling Technique from a cluster of 3 villages of Nawgachia block of Bhagalpur district. The study revealed that per ha average total cost of cultivation of banana var. robusta was found ranging between ₹ 1, 00,566.45 on marginal & small farms to ₹ 95, 294.42 on medium & large farms. The variable costs included material cost (72.55 %) and labour cost (23.60 %). The material cost was found highest (₹ 72364.71 per ha) on marginal & small farms. The average labour cost was estimated as ₹ 22512.93 per ha. The average cost of irrigation and fertilizer constituted 35.59 per cent and 16.01 per cent of total cost, respectively while labour cost constituted of 23.60 per cent. The yield (number of bunches per ha) was found ranging from 2768 to 2847 among three categories of farms and the average price received by the banana growers was ₹ 129.91 per bunch. The average gross income has been estimated as ₹ 3, 64,007.87 per ha, which was ranging in ascending order to size of farms; i.e., higher on large farms and less on marginal farms. The "return to total cost ratio" was estimated at 3.78, which was also in ascending order to size group.

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4. Floral Biology Studies in Guava (*Psidium guajava* L.) Genotypes

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ABSTRACT : This experiment was carried out to obtain information on flowering pattern of Psidium, so that suitable species or varieties can be used in future breeding programme for their hybridization work to plan and develop crosses. The results revealed that cultivar Allahabad Safeda was earliest to bloom (24th April) followed by Arka Amulya, Black guava, Hissar Surkha, Lalit and Snow White (25th April), whereas L-49 (Sardar) was last to flower (10th May). Flowering duration among guava genotypes differed significantly and it ranged between 39 to 52 days. The maximum flowering duration was observed in Lalit and Shweta (52 days) followed by Hisar Surkha (51 days), Sasni collection (51 days) and Arka Amulya (50 days), while, the shortest flowering duration was recorded in Hafsi Red (39 days). Thus, from the above findings it was noticed that the variation between the genotypes may be attributed to the differences in the genetic makeup of these genotypes. Observation and knowledge of such traits can guide a programme of genetic improvement, especially those pursuing derivation of varieties through hybridization programme. Also trees can possibly be exploited by cultural manipulation to flower and fruit when desired.

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5. Optimization of Protocol for Minimizing *in-vitro* Contamination of Embryo Cultured Peach (*Prunus persica* L.)

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ABSTRACT : Micro propagation is a rapid propagation technique for raising any kind of plant but it encounter with the utmost problem of contaminations by different sources such as bacteria, fungi and many more which reduces their productivity and completely prevents their successful cultivation. The present study was an attempt to minimize the contamination occurred in the embryo cultured peach by using different surface sterilants to obtain successful plantlet. Among the different sterilants cetrimide 5% for 15 minutes followed by carbandazium 2% for 5 minutes was the most effective treatment which showed maximum effect against contaminations. However, the sterilant 0.1% HgCl₂ for 10 minutes and ethanol for 70% for 3 minutes duration gave maximum uncontaminated plantlet with low survival rate.

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6. Physico-chemical and Morphological Evaluation of Guava (*Psidium guajava* L.) Genotypes under Tarai Conditions

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ABSTRACT : A field experiment was conducted on different guava genotypes to evaluate the physico-chemical and morphological properties of guava. Different guava genotypes performed significantly different. MPUAT Sel-1 exhibited maximum fruit diameter, fruit size, fruit weight, fruit volume and total sugars percentage. While, Kayamganzi exhibited maximum fruit length and reducing sugars. Allahabad Safeda showed maximum length : diameter ratio. RCGH - 11 showed maximum specific gravity. RCGH-1 showed maximum TSS, titratable acidity, non-reducing sugars, sugar : acid ratio, plant height, plant canopy spread and stem girth. Sangareddy showed maximum ascorbic acid content. Other traits showed inferior performance among the evaluated guava genotypes.

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7. Prevalence of Citrus diseases in Different Agro-climatic Zones of Punjab

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ABSTRACT : Surveys revealed that citrus foot rot/gummosis, fruit drop/stem-end rot and die-back were the most widespread diseases prevalent in Punjab. Other commonly occurring diseases were bacterial canker, citrus greening, citrus ring spot and sooty mould. Citrus foot rot/gummosis occurred in trees of all age groups across the agro-climatic zones. Population of *Phytophthora nicotianae* showed an increasing trend from July onwards and reached maximum in the month of September. Pathological fruit drop during the months of September and October was the most detrimental. Percent intensity of bacterial canker was very low in old orchards; whereas young orchards and nurseries in all the three agro-climatic zones were having low to moderate disease intensity. Citrus greening was more prevalent in the central and sub-mountainous regions, particularly on older trees. Moderate incidence of citrus ring spot was observed in arid-irrigated and central zones.

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8. Physico-chemical changes during Growth, Maturity and Ripening in Ber (*Ziziphus mauritiana Lamk*) cv. Gola and Chhuhara

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ABSTRACT : A study was conducted to evaluate the physical and chemical changes occurring during the various stages of fruit growth and development of 12-year-old Ber (cv. Gola and Chhuhara) trees. The ber fruit had a growth pattern of double sigmoid type. Fruit size rapidly increased from fruit set to 30th Nov. and comparatively slow from 30th Nov. to 30th Dec., thereafter it was increased upto 20th March. The fruit size remained unchanged after 20th March. Shape index was higher in initial stage and decreased continuously during the growth. The changes in fruit weight were almost similar to that of fruit length or diameter. The fruit weight increased with the advancement of maturity. The specific gravity of fruit showed a decreasing trend during the early stages and increased continuously until full fruit maturity. Pulp stone ratio was a slow and gradually increased after fruit set, followed by a sharp increase. The total soluble solids was low in early stage and it increased very much during later stages of fruit development. The per cent acidity was gradually increased up to 15th Feb. in cultivar Gola and upto 1st March in Chhuhara respectively, and it declined thereafter. Ascorbic acid content gradually increased from fruit set to maturity.

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9. Growth and Yield of Aloe (*Aloe barbadensis* M.) as influenced by Harvest Dates

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ABSTRACT : To investigate the growth and yield of Aloe (*Aloe barbadensis* M.) in open condition as influenced by harvest dates, an experiment was carried out at the Medicinal and Aromatic Plants (MAP) Block, Experimental Farm, Department of Horticulture, Assam Agricultural University in Jorhat during 2015-2016. A total of four treatments with five replications were laid out in a Randomized Block Design. The treatments were comprised of: T₀- Harvesting at an interval of two months (recommended practice), T₁- Harvesting at one and a half months interval (after first harvest), T₂- Harvesting at two and a half months interval (after first harvest) and T₃- Harvesting at three and a half months interval (after first harvest). The results showed that the different harvest intervals had significant effect on the growth and yield of Aloe. The maximum values for all the growth and yield parameters were observed in T₃ [Harvesting at three and a half months interval (after first harvest)] treatment whereas the minimum values were observed in T₁ [Harvesting at one and a half months interval (after first harvest)] treatment. Overall, Aloe leaves harvested at three and a half months interval resulted in higher productivity and maximum benefit in subtropical climate of Jorhat, Assam.

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10. Effect of different organic manures and bio-fertilizers on growth and yield of okra and nutrient uptake

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ABSTRACT : An experiment was conducted in okra [*Abelmoschus esculentus* (L.) Moench.] with different organic manures like farm yard manure , vermi compost, poultry manure and sheep manure with biofertilizer combinations like *Azotobacter chroococcum* and *Azospirillum brasiliense* with four replications in randomised block design during kharif season on an ustachrept soil of Central Horticultural Experiment Station farm at Vejalpur, Panchmahals, Gujarat. The results revealed that the crop receiving poultry manure gave significantly higher yields (27.54 t/ha) in okra compared to the other three manures like vermi-compost (23.37 t/ha), farm yard manure (20.43 t/ha), sheep manure (15.77 t/ha) and control (8.82 t/ha). However, between two sources of bio fertilizers *Azotobacter chroococcum* proved better and recorded higher yield (23.56 t/ha) compared to *Azospirillum brasiliense* (19.99 t/ha) with an increase of 17.86 percent over the other. Maximum nitrogen (226.2 kg/ha), phosphorous (18.9 kg/ha), potassium (62.4 kg/ha), calcium (157.8 kg/ha), magnesium (129.8 kg/ha) and sulphur (32.1 kg/ha) uptake was observed in the treatment received poultry manure in combination with *Azotobacter chroococcum*.

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11. Performance of Tuberose (*Polianthes tuberosa* L.) Cultivars grown for Spikes under Western Uttar Pradesh conditions

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ABSTRACT : A field experiment was conducted to assess the performance of tuberose cultivars used for spikes production under Western Utter Pradesh conditions at Research Farm, under Crop Cafetaria Unit , Krishi Vigyan Kendra, Hastinapur, SVP University of Agriculture & Technology, Meerut (UP) India during the year 2014-15 and 2015-16. Eight potential cultivars namely Mexican Single, Arka Nirantara, Shringar, Rajat Rekha, Pearl Double, Suvasini, Vaibhav and Swarn Rekha were performed in a Randomized Complete Block Design (RCBD) with three replications. Tuberose cultivars varied significantly for growth and flowering parameters. Among the various cultivars tested, the longest spike was recorded in the cv. Shringar (74.09 cm) which was at par with cvs. Maxican Single (73.53 cm), Arka Nirantara (71.24 cm) and Rajat Rekha (71.03 cm), whereas the cultivar Swarn Rekha exhibited shortest spike length (63.86 cm). Number of florets/spike was

found to be maximum in Vaibhav (32.32) being at par with Suvasini (31.32), Swarn Rekha (28.75) and Pearl Double (28.58). The minimum number of florets/spike was observed in cv. Rajat Rekha (17.55). The maximum production of spikes/ha was recorded in Suvasini (184110 Nos.) followed by Vaibhav (183731 Nos.), Shringar (183219 Nos.) and Arka Nirantara (182271 Nos.). The minimum number of spikes/ha was recorded in cv. Swarn Rekha (130640 Nos.).

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12. Fruit Production and Biochemical aspects of Seeds of *Euryale ferox* Salisb. under *ex-situ* Conditions

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ABSTRACT: Field studies on *Euryale ferox* Salisb. using fresh mature seeds were carried out in experimental plots of Research Centre for Makhana, Darbhanga. Production of fresh seeds has been estimated to be 3.0 t/ha. Biochemical analysis of fresh seeds revealed 55.16% available carbohydrate, 25.73% protein, 12.80% moisture, 4.68% fibre, 1.08% ash and 0.52% fat. The seeds were found to contain amylose 20.22%, P 65.41 mg/100 g, K 36 mg/100 g, Na 47.32 mg/100g, Fe 0.96 mg/100g, Mn 0.92 mg/100g, Cu 0.26 mg 100 g and Zn 0.83 mg/100 g.

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13. Effect of Stage of Maturity and Method of Drying on Bio-chemical and Organoleptic Attributes of Ber (*Ziziphus mauritiana* Lamk.) Fruits

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ABSTRACT : The study was carried out to evaluate the effect of different stages of ripening on the quality of *Z. mauritiana* fruits during drying. The fruits were graded into Immature (Greenish), Mature (Golden Yellow) and Ripe (Redish Brown) categories and these formed the treatments. The dehydration method was more effective than the open sun drying method for retention of fruits colour, reducing fruit spoilage percentage and moisture content during drying. Organoleptic rating was slightly higher in dehydrated fruits than sun drying fruits. In sun drying method per cent acidity was found higher whereas the ascorbic acid content was completely loosed.

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14. Response of Bulb size on Vegetative Growth, Flowering and Bulb Production in Tuberose (*Polianthes Tuberosa* L.) cv. Phule Rajani

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ABSTRACT : Apart from other production technologies, the performance of tuberose is also influenced by bulb and bulblet to be planted as propagation material. In the present study, beside mother bulb, four bulb grades (diameter in cm) namely, above 3.5 cm, 3.4-2.5, 2.4-1.5, and below 1.5 were selected as treatments for planting. The results revealed that planting of bulb grade above 3.5 cm diameter produced significantly maximum number of leaves/clump (39.15), width of leaf (1.88 cm), number of tillers/clump (14.10), spike length (65.20 cm), rachis length (30.43 cm), fresh weight of cut spike (75.20 cm), number of florets per spike (35.50), number of bulbs per clump (25.90), average diameter of bulb (3.15 cm) and total weight of bulbs/clump (392.40 g). Planting of mother bulbs produced significantly the maximum number of

bulblets per clump (52.35) and their corresponding weight (104.90g). On the other hand, planting of mother bulbs produced significantly the minimum width of leaf (1.46 cm), number of tillers per clump (12.00), rachis length (15.40 cm), fresh weight of cut spike (52.83 g) and weight of bulbs/clump (249.25g). Planting of smallest sized bulbs (below 1.5 cm diameter) produced significantly the minimum number of leaves (17.25) and tillers (12.00) per clump, number of florets/spike (21.18) and number of bulblets (19.05) and their weight (41.65g) per clump.

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15. Effect of NPK on Plant Growth and Flowering of *Amaryllis belladonna*

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ABSTRACT : The study on effect of NPK on plant growth and flowering of *Amaryllis belladonna* was carried out at Department of Horticulture, Allahabad School of Agriculture, SHIATS, Allahabad during 2013-2014. The study showed that at 180 DAP, application of $N_{125} : P_{50} : K_{125}$ Kg/ha resulted in significantly maximum plant height (43.96 cm) and No. of leaves/plant (8.66), too late flower scape emergence (174.66 days), tallest flower scape (51.76 cm), maximum diameter of flower bud (2.42 cm) and flowers (5.66) and longest durability of flower (6.55 days). The earliest flower scape emergence (167 days) was recorded in $T_1(N_{60} P_{30} K_{30}$ kg/ha) while total number of flower scapes/plant (3.33) and number of flowers/scape (4.10) were found maximum in T_5 ($N_{75} P_{45} K_{45}$ Kg/ha) and T_5 ($N_{175} P_{75} K_{175}$ Kg/ha), respectively.

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16. Effect of Mulching on the Growth and Yield of Onion (*Allium cepa* L.)

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ABSTRACT : An experiment was conducted at Campus Research Farm, B.R.D. (P.G.) College, Deoria, (U.P.) during the rabi season 2014-15 and 2015-16 to assess the influence of different mulching on the growth and yield of onion. The experiment was laid out in randomized block design with three replications. Treatments of the experiment were seven types of mulching such as control (M_0), Rice straw (M_1), Water hyacinth (M_2), Baggage straw (M_3), Wheat straw (M_4), Grass straw (M_5) and Pipal leaf straw (M_6). The results revealed that growth parameters viz. plant height, no. of leaves, bulb length, bulb diameter, bulb weight and bulb yield were increased significantly with adopting mulching. The maximum plant height, no. of leaves, bulb length, bulb diameter, bulb weight and bulb yield were recorded under Pipal leaf straw. Interestingly, the plant height, no. of leaves, bulb length, bulb diameter, bulb weight and bulb yield did not show significantly differences between M_6 and M_3 . So, mulching with Pipal leaf straw and water hyacinth numerically gave the highest yield 38.00 t/ha, 38.40 t/ha and 37.50 t/ha., 37.60 t/ha during both year of experimentation, respectively.

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2. Johnson, D.A. (1940). *Plant Microtechnique*. McGraw- Hill Publishing Co. Ltd., New York. PP-29
3. Kapil, R.N. and Arora, S. (1990). Some fascinating features of orchid pollen. *J. Orchid Soc.*, 4 (1): 9-28.
4. Rashid, S., Ashraf, M., Bibi, S. and Anjum, R. (2000). Antibacterial and antifungal activities of *Launaea nudicaulis* Roxb. and *Launaea resedifolia* L. *Pakistan J. Biol. Sci.*, 3 (4) :630-632.

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